

REMARKS

This is in response to the Office Action mailed March 8, 2005, in which the Examiner reopened prosecution and rejected claims 1-23. Reconsideration of the application as amended is respectfully requested.

Claim Objections

In Section 2 of the Office Action, the Examiner objected to claim 38 (previously claim 16) due to an informality. Applicant has amended claim 38 to correct the error and requests that the objection be withdrawn.

In Section 3 of the Office Action, the Examiner objected to claims 2, 4-9, 12, 13 and 15 for not being in proper dependent form. With this amendment, Applicant has canceled claims 1-16 and 21-23 and has resubmitted the claims as claims 24-42. Claims 24-42 are identical to the previously pending claims that they replace except for the amendment to claim 16 (now claim 38) and the addition of the word "calculated" to the last subparagraph of claim 10 (now claim 35).

For your reference, the claims have been renumbered as follows: claim 1 is now claim 24; claim 2 is now claim 28; claim 3 is now claim 25; claim 4 is now claim 29; claim 5 is now claim 30; claim 6 is now claim 31; claim 7 is now claim 32; claim 8 is now claim 33; claim 9 is now claim 34; claim 10 is now claim 35; claim 11 is now claim 36; claim 12 is now claim 40; claim 13 is now claim 42; claim 14 is now claim 37; claim 15 is now claim 41; claim 16 is now claim 38; claim 21 is now claim 26; claim 22 is now claim 27; and claim 23 is now claim 39.

Applicant submits that the amendments place the claims in the form requested by the Examiner. Accordingly, Applicant requests that the objections be withdrawn.

Claim Rejections - 35 U.S.C. §103

In Section 5 of the Office Action, the Examiner rejected claim 24 (previously claim 1) under 35 U.S.C. §103(a) as being unpatentable over Oswald et al. (U.S. Patent No. 5,457,990) in view of Burger et al. (U.S. Patent No. 5,969,666). Applicant respectfully disagrees with the Examiner's assessment of the cited references.

The argument presented by the Examiner in the Office Action is substantially identical to that previously presented in the Office Action mailed December 13, 2004. The Examiner cites column 10, lines 53-56 of Oswald et al., which states that "[t]he outputs of the voltage trackers 90 and 92 respectively define positive and negative threshold levels, each being a predetermined fraction of their respective peak value." The Examiner appears to find that this section is determinative that "Oswald does not only hold the detected maximum and minimum values but calculates a predetermined fraction of these maximum and minimum values that are then output from the voltage trackers as the threshold values, and therefore meets the calculating step of claim 1." Applicant respectfully disagrees with the Examiner's assessment of Oswald et al. for the reasons set forth in Applicant's response of January 25, 2005, and for the reasons set forth below.

Oswald et al. provide no disclosure of a calculation being performed with respect to determining what the "predetermined fraction" of the respective peak values that the threshold levels are set to. It is not inherent from the disclosure of Oswald et al. that a calculation in accordance with claim 24 is being performed.

As described in the Background of the present application, threshold values are conventionally set using empirical methods. The thresholds must be set to a fraction of the peak value of the reflected waves they are being used to

detect in order to perform their detection function. Thus, for example, the "predetermined fraction" to which the thresholds of Oswald et al. are set, could be a value that was determined through empirical methods without performing any calculations. Moreover, even if a calculation is performed to obtain the "predetermined fraction" value in Oswald et al., there is no disclosure that the calculation includes "calculating an estimated first reflected pulse amplitude as a function of a reference amplitude of the transmitted microwave pulse", as described in claim 24.

Therefore, Applicant submits that claim 24 is non-obvious in view of the cited references, since the cited references fail to teach all the steps of the method. Accordingly, Applicant requests that the rejection of claim 24 be withdrawn.

In Section 6 of the Office Action, the Examiner rejected claim 24 (previously claim 1) under 35 U.S.C. §103(a) as being unpatentable over Reddy, III et al. (U.S. Patent No. 5,134,377) in view of Shuff et al. (U.S. Patent No. 4,107,993).

The Examiner cites column 1, line 64 through column 2, line 2 and column 9, lines 6-20 of Reddy, III et al. as teaching the calculating step of claim 24. Applicant respectfully disagrees with the Examiner's assessment of the cited references.

In particular, the cited sections of Reddy, III et al. relate to an "autoreferencing step". The disclosed autoreferencing step involves setting a threshold level (negative detection threshold) to a maximum positive value, sending a launch pulse down a cable, and attempting to detect a reflection. As long as the level of the reflection is not detected with the set threshold level, the threshold level is automatically stepped down, and the launch pulse is resent. Once the reflection is detected, the threshold level is stepped up one step and the

autoreferencing for that cable is set and stored in memory where it may be recalled for later use.

Accordingly, the disclosed "autoreferencing step" merely automates the empirical methods of the prior art and fails to perform the calculating step described in claim 24. Therefore, Applicant submits that claim 24 is non-obvious in view of the cited references and requests that the rejection be withdrawn.

In Section 7 of the Office Action, the Examiner rejected claim 26 (previously claim 3) under 35 U.S.C. §103(a) as being unpatentable over Reddy, III et al. in view of Shuff et al. and further in view of Rost (U.S. Patent No. 6,087,977). In light of the discussion above, Applicant submits that claim 26 is allowable as being dependent from allowable base claim 24 (previously claim 1) and requests that the rejection be withdrawn.

In Section 8 of the Office Action, the Examiner rejected claim 24 (previously claim 1) under 35 U.S.C. §103(a) as being unpatentable over McEwan (U.S. Patent No. 5,609,059) in view of Reddy, III et al. As discussed above, Reddy, III et al. fail to disclose the calculating step of independent claim 24. Therefore, Applicant submits that claim 24 is non-obvious in view of the cited references and requests that the rejection be withdrawn.

In Section 9 of the Office Action, the Examiner rejected claim 26 (previously claim 3) under 35 U.S.C. §103(a) as being unpatentable over McEwan in view of Reddy III, et al., and further in view of Rost. In view of the discussion above, Applicant submits that claim 26 is allowable as being dependent from an allowable base claim, and requests that the rejection be withdrawn.

In Section 10 of the Office Action, the Examiner rejected claims 35 (previously claim 10), claim 36 (previously claim 11), 17-19 and claim 26 (previously claim 21) under 35 U.S.C. §103(a) as being unpatentable over McEwan in view of Reddy III, et al. and further in view of Innes et al. (U.S. Patent No. 5,943,908). Applicant respectfully disagrees with the Examiner's assessment of the cited references.

In particular, none of the cited sections of Innes et al. disclose a step of "calculating a first pulse amplitude as a function of the reference amplitude, and the first and second dielectric parameter" or "setting a first threshold value as a function of the calculated first pulse amplitude", as described in claim 35. Additionally, as discussed above, Reddy III, et al. fail to disclose such a calculating step or setting a threshold value based on a calculation. Therefore, Applicant submits that independent claim 35 is non-obvious in view of the cited references and requests that the rejection be withdrawn. Additionally, Applicant submits that claim 36 is allowable as being dependent from allowable base claim 35, and requests that the rejection be withdrawn.

With regard to independent claim 17, none of the cited references including the cited sections of Innes et al. disclose "a threshold calculation module executable by the microprocessor system and adapted to calculate a first threshold value as a function of the transmit pulse amplitude and properties of the materials" or "a level calculation module executable by the microprocessor system and adapted to establish a level of a first material interface using the signal and the first threshold value", as described in claim 17. Therefore, Applicant submits that claim 17 is non-obvious in view of the cited references, and requests that the rejection be withdrawn. Additionally, Applicant submits that claims 18 and 19 are allowable as being dependent

from allowable base claim 17, and request that the rejections be withdrawn.

Applicant further believes that claim 26 is allowable as being dependent from base claim 24 (previously claim 1), which is believed to be allowable for the reasons set forth above. Accordingly, Applicant requests that the rejection be withdrawn.

In Section 11 of the Office Action, the Examiner rejected claims 28, 29-34, 40, 42, 37, 41, 27 and 39 (previously claims 2, 4-9, 12-15, 22 and 23, respectively) under 35 U.S.C. §103(a) as being unpatentable over McEwan in view of Reddy III, et al. and Innes et al. and further in view of Rost. Applicant submits that each of the rejected claims is allowable as being dependent from either independent claim 24 (previously claim 1) or independent claim 35 (previously claim 10), which are believed to be allowable for the reasons set forth above. Therefore, Applicant requests that the rejections be withdrawn.

In Section 12 of the Office Action, the Examiner rejected claim 38 (previously claim 16) under 35 U.S.C. §103(a) as being unpatentable or McEwan in view of Reddy III, et al. and Innes et al. and further in view of Kuipers et al. (U.S. Patent No. 5,973,503). Applicant submits that claim 38 is allowable as being dependent from independent claim 35 (previously claim 10), which is believed to be allowable for the reasons set forth above. Therefore, Applicant requests that the rejection of claim 38 be withdrawn.

In Section 13 of the Office Action, the Examiner rejected claim 20 under 35 U.S.C. §103(a) as being unpatentable over McEwan in view of Reddy III, et al. and further in view of De Carolis (U.S. Patent NO. 3,812,422). Applicant submits that claim 20 is allowable as being dependent from independent claim

17, which is believed to be allowable for the reasons set forth above. Therefore, Applicant requests that the rejection be withdrawn.

Conclusion

In view of the above comments and remarks, Applicant submits that the present application is in condition for allowance. Reconsideration and favorable action is respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: 

Christopher R. Christenson, Reg. No. 42,413  
Suite 1400 - International Centre  
900 Second Avenue South  
Minneapolis, Minnesota 55402-3319  
Phone: (612) 334-3222 Fax: (612) 334-3312

JKC/CRC/djb